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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/596,135
Filing Date: June 01, 2006
Appellant(s): PAUWS, STEFFEN CLARENCE

Robert M. McDermott, Registration No. 41,508
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 17, 2008 appealing from the Office action mailed July 18, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 11 is directed to a manufacturer. However, in accordance with disclosure, the "*computer media*" is intended to transmit media such as signals, and carrier waves (in view of specification, page 14, lines 2-4). Since the transmission media is not a tangible, physical article or object to constitute a manufacture, and it is not a machine, process of composition matter. As such, it is non-functional descriptive material. Non-functional descriptive material cannot be made statutory even if claimed as recorded on some computer readable medium. Therefore, claim 11 is non-statutory.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Tsui et al., US Publication Number 2007/0163425 (hereinafter Tsui).

Regarding claim Tsui discloses a method comprising:

decomposing a query string that corresponds to an encoding of an audio fragment into a sequence of a plurality of query sub-strings (e.g. the melody-to-note conversion subsystem converts the digitized input melody (as *a query string*) into a sequence of musical notes (as *sub-strings*) characterized by pitch, beat duration and confidence levels, §0042, lines 1-4);

independently searching a melody database for at least a respective closest match each sub-string of the plurality of query sub-strings (e.g. the note matching engine compares the differential note and timing file from the melody-to-note conversion subsystem with songs or pieces of music in the music reference database, §0044, lines 1-4); and

in dependence on search results for the respective sub-strings, determining at least a closest match for the query string (e.g. the note matching engine calculates a matching score for each song in the database, §0044, lines 20-21; and the out put subsystem sorts the songs or music in the database based on the matching scores. The highest ranked song(s) or piece(es) of music is selected for presentation to the

user, §0045).

Regarding claim 2, Tsui further discloses, wherein decomposing the query string includes decomposing the query string into sub-strings that each substantially correspond to a phrase of a melody (§0042, lines 1-4).

Regarding claim 3, Tsui further discloses, including enabling a user to input the query string (e.g. the input melody originate from a user, §0041, line 4).

Regarding claim 4, Tsui further discloses, wherein the query string includes a plurality of query input modalities that includes at least one of: humming, singing, whistling, tapping, clapping, percussive vocal sounds (§0041, lines 1-11).

Regarding claim 5, Tsui further discloses, wherein the query string includes a plurality of query input modalities and a change in query input modality substantially coincides with a sub- string boundary (e.g. a list of breakpoints, which indicate the boundaries between distinct notes in the input melody, §0048).

Regarding claim 6, Tsui further discloses, wherein decomposing the query string includes:

estimating how many (Ns) sub-strings are present in the query string (§0062, lines 5-16);

dividing the query string in Ns sequential sub-strings; each sub-string being associated with a respective centroid that represents the sub-string (§0010);

iteratively:

for each centroid, determining a respective centroid value in dependence on the sub-string associated with the respective centroid (§0067, lines 1-4); and

determining, for each of the sub-strings, corresponding sub-string boundaries by minimizing a total distance measure between each of the centroids and the sub-string associated with the respective centroid (§0011);

until a predetermined convergence criterion is met (§0008).

Regarding claim 7, Tsui further discloses, wherein estimating how many (Ns) sub-strings are present in the query string includes dividing a duration of the audio fragment by an average duration of a phrase (§0010).

Regarding claim 8, Tsui further discloses, wherein decomposing the query string includes retrieving for each of the input modalities a respective classification criterion and detecting the change in query input modality, based on the classification criteria (§0104).

Regarding claim 9, Tsui further discloses, including constraining a sub-string to fall within two successive changes in query input modality (§0052-§0055).

Regarding claim 10, Tsui further discloses, searching for each sub-string in the database includes generating for the sub-string an N-best list (N >=2) of the N most closest corresponding parts in the database with a corresponding measure of resemblance (e.g. a list of breakpoints, §0048); and performing the determining of the at least closest match for the query string based on the measures of resemblance of the N-best lists of the sub-strings (§0050-§0051).

Regarding claim 11, Tsui discloses a computer media that includes a computer program product operative to cause a processor to:

decompose a query string that corresponds to an encoding of an audio fragment into a sequence of a plurality of query sub-strings (§0042, lines 1-4);

independently search a melody database for at least a respective closest match for each sub-string of the plurality of query sub-strings (§0044, lines 1-4); and

in dependence on the search results for the respective sub-strings, determine at least a closest match for the query string (§0045).

Regarding claim 12, Tsui discloses a system comprising:

an input for receiving a query string that corresponds to an encoding of an audio fragment from a user (§0041, lines 1-2);

a melody database for storing respective representations of plurality of audio fragments (e.g. a music reference database, §0043, lines 1-3);

at least one processor that is configured to:

decompose the query string into a sequence of a plurality of query sub-strings (§0042, lines 1-4);

search the database for at least a respective closest match for each sub-string of the plurality of query sub-strings (§0044, lines 1-4); and

determine at least a closest match for the query string based on the closest matches for the plurality of query sub-strings (§0045).

Claims 13-16 recite "the system" for performing the method similar to claims 2-6, therefore claims 13-16 are rejected by the same reasons as discussed above.

Regarding claim 17, Tsui further discloses, the processor is configured to decompose the query string by:

retrieving for each of the input modalities a respective classification criterion and

detecting the change in query input modality based on the classification criteria (§0104).

Claims 18-19 recite "the system" for performing the method similar to claims 6-7, therefore claims 14-15 are rejected by the same reasons as discussed above.

Claims 20 recites "the system" is similar to claim 10, therefore claims 20 are rejected by the same reasons as discussed above.

(10) Response to Argument

A. Rejection Under 35 U.S.C. §101: Claims 11 is directed to non-statutory matter.

Appellant is silent to the rejection of claim 11 under 35 U.S.C. §101 in the Final Rejection of 07/18/2008. Therefore, the Examiner hereby respectfully maintaining the same grounds of rejection to claim 11 as set forth in the Final Rejection.

B. Rejection Under 35 U.S.C. §102(e): Claims 1-20 are rejected over Tsui.

In response to Appellant's argument to rejections of independent claims 1, 11 and 12:

Tsui fails to teach "*independently searching a melody database for at least a respective closest match for each sub-string of a plurality of query sub-strings*", and fails to teach "*determining at least a closest match for the query string based on the search results for such sub-strings*".

The Examiner respectfully disagrees. In the final rejection of 07/18/2008, page 5, the Examiner submitted that: the step of "*independently searching a melody database for a closest match for each sub-string of a plurality of query sub-strings*" is disclosed by Tsui in §0044, lines 1-4 (e.g. the note matching engine compares the differential note and timing file from the melody-to-note conversion subsystem with songs or pieces of music in the music reference database). Wherein, the note matching engine is a score-based engine. It generates a score for each song in the reference database based on the similarity of the input melody input to the songs in the database, taking into account the

confidence levels of each identified breakpoint and each extracted note (§0085, lines 1-6). To repair for matching step, Tsui discloses "The input conversion is accomplished through spectral analysis techniques which are used to find "breakpoints" in the input melody in order to separate it into distinct notes" (§0042, lines 4-7). Therefore, "*independently searching a melody database for a closest match for each sub-string of a plurality of query sub-strings*" is clearly defined in Tsui reference.

As per Appellant's assertion: "*the Office action maintains that each note of the input query corresponds to a sub-string*". The Examiner did not construe "*each note" as "a sub-string*" as asserted by the Appellant. Since, independent claims fail to define the boundaries of "*sub-string*" (i.e. *decomposing a query string that corresponds to an encoding of an audio fragment into a sequence of a plurality of query sub-strings*), Examiner has full latitude to interpret each claim in the broadest reasonable sense (in re Morris, 127 F.3d 1048, 105455, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997)). Examiner references prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

Because Tsui does teach "*independently searching a melody database for a closest match for each sub-string of a plurality of query sub-strings*" , Tsui can be said to teach the step of "*determining ar least a closest match for the query string based on the search results for the respective sub-strings*" (e.g. the note matching engine calculates a matching score for each song in the database; and the out put subsystem sorts the songs or music in

the database based on the matching scores. The highest ranked song(s) or piece(es) of music is selected for presentation to the user, §0044-§0045). Wherein, the note matching engine is a score-based engine. It generate a socre for each song in the reference database based on the similarity of the input melody input to the songs in the database, taking into account the confidence levels of each identified breakpoint and each extracted note (§0085, lines 1-6).

In response to Appellant's argument: Tsui does not teach "*determining a matching score for each sub-string of the query string*", in page 9 of the Appeal Brief.

The Examiner respectfully submits that the phrase "*determining a matching score for each sub-string of the query string*" will not be addressed since is not disclosed in rejected independent claims 1, 11 and 12.

In response to Appellant's argument to rejections of dependent claims 2 and 13:

Tsui fails to teach "*decomposing a query string into sub-strings that each substantially correspond to a phrase of a melody*".

The Examiner respectfully disagrees. The Examiner submitted that: the step of "*decomposing a query string into sub-strings that each substantially correspond to a phrase of a melody* " is disclosed by Tsui in §0042, lines 1-4 (e.g. the melody-to-note conversion subsystem converts the digitized input melody (as *a query string*) into a sequence of

musical notes (as *sub-strings*) characterized by pitch, beat duration and confidence levels). Wherein, the sequence of musical notes is "*a phrase of a melody*".

In response to Appellant's argument to rejections of dependent claims 5, 8 and 16-17:

Tsui fails to teach that "*a change in query input modality substantially coincides with a sub-string boundary*"

The Examiner respectfully disagrees. The Examiner submitted that: the step of "*a change in query input modality substantially coincides with a sub-string boundary*" is disclosed by Tsui in §0048 and in §0104 (e.g. a list of breakpoints, which indicate the boundaries between distinct notes in the input melody, and one aspect of the invention is concerned with estimating or determining breapoints based on chages in the spectral energy distribution of the input melody). Wherein, an input melodyoriginate from a user in the form of humming, singing, whistling or other such types of music-like vocalization (§0041, lines 4-18).

In response to Appellant's argument to rejections of dependent claims 8 and 17:

Tsui fails to teach "*detecting the change in query input modality based on a classification criteria of each input modality*".

The Examiner respectfully disagrees. The Examiner submitted that: the step of "*detecting the change in query input modality based on a classification criteria of each input*

modality " is disclosed by Tsui in §0104 (e.g. one aspect of the inventin is concerned with estimating or determining breakpoints based on changes in the spectral energy distribution of the input melody). Wherein, to determine breakpoints for input melody, the input need to be detected by sound detection (see figure 22, element 55).

In response to Appellant's argument to rejections of dependent claims 6, 7, 10 and 18-20:

Tsui fails to teach the limitations of claims 6, 7, 10 and 18-20.

The Examiner respectfully disagrees. The Examiner submitted that: the steps of claims 6 and 18 are disclosed by Tsui (e.g. estimating how many (Ns) sub-strings are present in the query string (§0062, lines 5-16); dividing the query string in Ns sequential sub-strings; each sub-string being associated with a respective centroid that represents the sub-string (§0010); iteratively: for each centroid, determining a respective centroid value in dependence on the sub-string associated with the respective centroid (§0067, lines 1-4); and determining, for each of the sub-strings, corresponding sub-string boundaries by minimizing a total distance measure between each of the centroids and the sub-string associated with the respective centroid (§0011); until a predetermined convergence criterion is met (§0008)).

The step of claims 7 and 19 are dicloses by Tsui in §0010 (estimating how many (Ns) sub-strings are present in the query string includes dividing a duration of the audio fragment by an average duration of a phrase (§0010)).

And the step of claims 10 and 20 are discloses in Tsui, §0048 and §0050- §0051 (searching for each sub-string in the database includes generating for the sub-string an N-best list (N >=2) of the N most closest corresponding parts in the database with a corresponding measure of resemblance (e.g. a list of breakpoints, §0048); and performing the determining of the at least closest match for the query string based on the measures of resemblance of the N-best lists of the sub-strings (§0050-§0051)).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Cecile Vo/
Patent Examiner
Art Unit 2169
December 02, 2008

Conferees:

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and,

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